

1. (Cancelled)

2. (Currently Amended) A method for immobilizing biomolecules on a surface of a silicon semiconductor that includes a plurality of photodiodes, comprising the steps of: applying a layer of a hydrophobic polymer to the surface of the silicon semiconductor, and immobilizing the biomolecules on a surface of the layer of hydrophobic polymer by spotting, wherein the polymer is from a group comprising at least one of a polyimide and a polystyrene, and the polymer layer is applied to the surface of the silicon semiconductor in previously defined regions.

3. (Currently Amended) The method of claim 8, wherein the polymer layer is applied to a planar surface of the ~~the surface of the~~ silicon semiconductor ~~in previously defined regions.~~

4. (Previously Presented) The method of claim 8, wherein an electric charge is imparted to the surface of the polymer layer, at least in sectional fashion, by plasma treatment.

5. (Previously Presented) The method of claim 8, wherein UV-reactive biomolecules are covalently immobilized by irradiation with UV light.

6. (Previously Presented) The method of claim 8, wherein the polymer layer is activated, at least in sectional fashion, in an oxygen plasma.

7. (Previously Presented) The method of claim 8, wherein a portion of the surface of the polymer layer is utilized for application with an integrated circuit.

8. (Currently Amended) A method for immobilizing biomolecules on a surface of a silicon semiconductor containing a plurality of CMOS photodiodes, comprising the steps of applying a layer of a hydrophobic polymer to the surface of the silicon semiconductor, and immobilizing the biomolecules on a surface of the layer of hydrophobic polymer by spotting, and the hydrophobic polymer layer is applied to the surface of the silicon semiconductor in previously defined regions.

9. (Previously Presented) The method of claim 8, where the polymer is a polyimide.

10. (Previously Presented) The method of claim 8, where the polymer is a polystyrene.

11. (Previously Presented) The method of claim 8, further comprising the steps of forming at least one defined region on the surface of the silicon semiconductor, and applying the layer of a hydrophobic polymer to the at least one defined region on the surface of the silicon semiconductor.

12. (Previously Presented) The method of claim 8, where the polymer layer is activated in an oxygen plasma.

13. (Cancelled)

14. (Previously Presented) The method of claim 8, where an electric charge is imparted to the surface of the polymer layer by plasma treatment.

15. (Cancelled)

16. (Previously Presented) The method of claim 8, where the polymer comprises a non-swelling polymer.

17. (Previously Presented) The method of claim 8, where the surface of the silicon semiconductor to which the polymer layer is applied may comprise an inorganic material.

18. (Cancelled)

19. (Cancelled)

20. (Previously Presented) The method of claim 17, where the inorganic material comprises a semiconducting oxide.

21. (Previously Presented) The method of claim 8, where the silicon semiconductor includes electrical sensors and processor circuits.

22. (New) The method of claim 2, where the polymer layer is applied to a planar surface of the silicon semiconductor.